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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS
DIVISION OF AGRICULTURAL ENGINEERING

S. H. McCrory, Chief.

MONTHLY NEWS LETTER

WASHINGTON, D. C., DECEMBER 20, 1927

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: IN THIS, THE LAST ISSUE OF THE NEWS :
: LETTER FOR 1927, I TAKE OCCASION TO EXPRESS :
: TO ALL THE MEMBERS OF THE STAFF MY APPRECI- :
: ATION OF THE FINE SPIRIT OF LOYALTY AND :
: COOPERATION THAT HAS CHARACTERIZED YOUR :
: WORK DURING THE YEAR, AND TO EXTEND MY BEST :
: WISHES FOR A MERRY CHRISTMAS AND PROSPEROUS :
: AND PRODUCTIVE NEW YEAR. :
: :
: *S. H. McCrory* :
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MR. McCRORY ON NOVEMBER 22, RETURNED FROM HIS SOUTHWESTERN TRIP MENTIONED IN THE NOVEMBER NEWS LETTER. NOVEMBER 29 - DECEMBER 2, HE ATTENDED, AT CHICAGO, THE ANNUAL MEETING OF THE FARM POWER AND STRUCTURES DIVISION OF THE AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS. H. B. WALKER ALSO ATTENDED THESE MEETINGS, COMMENTS ON WHICH WILL DOUBTLESS APPEAR IN AN EARLY ISSUE OF AGRICULTURAL ENGINEERING.

FOLLOWING THE CHICAGO MEETINGS MR. WALKER BEGAN A TRIP TO THE NORTHEAST SECTION OF THE UNITED STATES FOR THE PURPOSE OF CONFERRING WITH AGRICULTURAL COLLEGE OFFICIALS REGARDING THE FARM MACHINERY RESEARCH PROJECT. ON HIS RETURN TRIP TO THE WEST, MR. WALKER SPENT TWO DAYS AT WASHINGTON AND AT THE MARYLAND AGRICULTURAL COLLEGE.

F. E. STAEBNER AND H. SCHILDKNECHT HAVE REACHED FRANKLIN, LA. ON THEIR ITINERARY THROUGH CERTAIN OF THE MIDDLE WESTERN AND SOUTHERN STATES FOR THE PURPOSE OF COLLECTING SUITABLE SOIL SAMPLES FOR LABORATORY STUDY IN THE MATTER OF DETERMINING DRAINAGE CHARACTERISTICS OF SOILS.

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F. O. BARTEL SPENT DECEMBER 15-17, IN WASHINGTON IN CONFERENCE WITH L. A. JONES OVER THE REVISION OF FARMERS' BULLETIN 1386, "TERRACING FARM LANDS." AN EXCEEDINGLY GREAT INTEREST IN TERRACING AND EROSION PREVENTION HAS DEVELOPED IN RECENT MONTHS, ESPECIALLY IN OKLAHOMA AND TEXAS. SOME IDEA OF THIS INTEREST MAY BE GAINED FROM THE FACT THAT ONE OF THE CHAMBERS OF COMMERCE OF TEXAS CONTEMPLATES PURCHASING 50,000 COPIES OF THE REVISED EDITION OF FARMERS' BULLETIN 1386 AS SOON AS IT IS ISSUED. MR. JONES RECENTLY SPENT ABOUT A WEEK IN OKLAHOMA FOR THE PURPOSE OF SELECTING AND SECURING INFORMATION REGARDING A SUITABLE TRACT ON WHICH TO CONDUCT TERRACING STUDIES ON A RATHER LARGE SCALE. UNDER THE PLAN NOW CONTEMPLATED TERRACES OF VARIOUS TYPES WOULD BE ACTUALLY CONSTRUCTED UNDER A CONSIDERABLE RANGE OF TOPOGRAPHIC CONDITIONS. THE LAND WOULD BE PUT UNDER CULTIVATION AND HANDLED AS FARM LAND, SUITABLE OBSERVATIONS BEING MADE ON RUN-OFF AND EROSION.

ON JANUARY 6, C. E. RAMSER WILL ADDRESS THE ILLINOIS SOCIETY OF ENGINEERS AT URBANA, ILLINOIS, ON THE SUBJECT OF "FLOW IN DRAINAGE DITCHES FOR CLEARED AND UNCLEARED CONDITION OF CHANNELS."

L. M. WINSOR HAS RETURNED TO DUTY WITH THIS OFFICE, AFTER WORKING WITH THE BIOLOGICAL SURVEY ON THE POSSIBILITY OF CREATING A BIRD REFUGE IN THE VICINITY OF BEAR RIVER BAY, UTAH, BY SEPARATING THE FRESH WATER MARSHES FROM THE SALT WATERS OF GREAT SALT LAKE. IT IS CONCLUDED THAT AT LEAST 100 SQUARE MILES OF TERRITORY MAY BE CONSISTENTLY INCLUDED IN THE PROPOSED RESERVATION. NATURAL MARSH LAND LYING EAST OF BEAR RIVER REQUIRES ONLY AN ADEQUATE WATER SUPPLY TO MAKE IT AVAILABLE, THE ENGINEERING PROBLEMS BEING VERY SIMPLE, THE CHIEF DIFFICULTY LYING IN THE FACT THAT THE ENTIRE AREA IS OWNED PRIVATELY. LANDS WEST AND NORTH OF BEAR RIVER AND ALL LANDS BORDERING THE LAKE MUST BE DYKED TO CREATE FRESH WATER MARSHES. FRESHENING THE ENTIRE BAY WOULD INVOLVE LEGAL COMPLICATIONS AND HEAVY MAINTENANCE COSTS AND IS NOT ADVOCATED AT PRESENT. IT IS CONCLUDED THAT DYKES CAN BE ECONOMICALLY BUILT FROM THE NATURAL FORMATIONS; THAT WITH A SLOPE AT THE WATER SURFACE OF 1 TO 10 THEY WILL STAND INDEFINITELY UNDER ORDINARY CONDITIONS OF WAVE EROSION AND ICE ACTION; AND THAT ARTIFICIAL FACING WITH SHEET PILING OR OTHER FORM OF PROTECTION IS NOT NECESSARY EXCEPT WHERE THE FORMATION IS COMPOSED ENTIRELY OF FINE SILT. IT IS RECOMMENDED THAT THE PROJECT, WITH A TOTAL AREA OF 82,900 ACRES, BE BUILT IN UNITS OF FROM 3,000 TO 12,000 ACRES AT AN ESTIMATED COST OF \$7.45 PER ACRE.

W. W. McLAUGHLIN RECENTLY MET MR. McCrory AT ALBUQUERQUE, NEW MEXICO, VISITING MESSRS. BLANEY, BLOODGOOD, FELLOWS, PARSHALL, AND ROHWER ON THE SAME TRIP.

MESSRS. McLAUGHLIN AND BLANEY HELD A CONFERENCE WITH THE CHIEF OF THE CALIFORNIA DIVISION OF WATER RIGHTS RELATIVE TO A PROPOSED STUDY OF RAINFALL PENETRATION ON THE VALLEY FLOORS IN SEVERAL SOUTHERN CALIFORNIA COUNTIES.

COOPERATION WITH THE UNIVERSITY OF IDAHO ON ALKALI LAND RECLAMATION ON THE HELMS TRACT HAS BEEN EXTENDED TO INCLUDE THE SCHOOL OF FORESTRY, IT BEING PLANNED TO START EXPERIMENTS NEXT SPRING, UNDER THE

IMMEDIATE DIRECTION OF J. C. MARR, WITH 13 VARIETIES OF HARDWOODS AND 7 VARIETIES OF CONIFERS.

W. L. STOCKWELL, JR., REPORTS A PUMP TEST CONDUCTED BY MR. HARDMAN IN LAS VEGAS VALLEY ON A NEW WELL, IN WHICH IT WAS FOUND THAT THIS ONE WELL STOPPED THE FLOW OF FIVE WELLS NEAREST AND REDUCED THE FLOWS OF THREE OR FOUR MORE BY MORE THAN ONE-HALF.

A. T. MITCHELSON MADE A BRIEF FIELD STUDY OF METHODS OF DIVERTING AND SPREADING STORM WATERS IN SOUTHERN CALIFORNIA IN ORDER TO INCREASE UNDERGROUND STORAGE. THIS STUDY WAS FOR THE PURPOSE OF DETERMINING THE EXTENT TO WHICH THE PRACTICE COULD BE USED IN SANTA CLARA VALLEY.

G. M. WARREN HAS RETURNED FROM A TRIP THROUGH PORTIONS OF MARYLAND, PENNSYLVANIA, NEW YORK, NEW ENGLAND, OHIO, VIRGINIA AND NORTH CAROLINA DURING WHICH HE OBTAINED DATA FROM ABOUT 25 TYPICAL FARM WATER POWER PLANTS. THESE PLANTS CONSISTED OF OVERSHOT, UNDERSHOT AND TURBINE WHEELS BOTH STEEL AND WOOD AND ONE HOMEMADE IMPULSE WHEEL. MR. WARREN ALSO VISITED MANUFACTURERS OF WATER WHEELS AND ELECTRICAL EQUIPMENT.

AT TROY, NEW YORK, MR. WARREN EXAMINED THE RUINS OF WHAT IS BELIEVED TO BE THE WORLD'S MOST POWERFUL OVERSHOT WHEEL. IT WAS CONSTRUCTED IN 1851 BY HENRY BURDEN, FOUNDER OF THE BURDEN IRON WORKS AND FOR NEARLY HALF A CENTURY FURNISHED ALL POWER FOR A LARGE AND SUCCESSFUL IRON INDUSTRY. THE WHEEL HAS AN OVERALL DIAMETER OF 61 FEET 9 INCHES AND AN OVERALL WIDTH OF 22 FEET, AND WEIGHS 234 TONS. THE WOOD RIM 11 INCHES THICK IS SECURED BY 264 - $1\frac{1}{2}$ INCH RADIAL RODS AND CARRIES 36 - $1\frac{3}{4}$ INCH CURVED PLANK BUCKETS EACH 20 FEET LONG AND 5 FEET 9 INCHES DEEP. FORTY-FIVE HUNDRED CUBIC FEET OF WATER PER MINUTE WAS DELIVERED TO THE TOP OF THE WHEEL THROUGH A 5-FOOT CIRCULAR BRICK FLUME TERMINATING IN A CIRCULAR IRON CHUTE EQUIPPED WITH 4 GATES WITH RACKS AND PINIONS. ON A BASIS OF 4,500 MINUTE-FEET AND A FALL OF 60 FEET, THE THEORETICAL H.P. IS ABOUT 511. ORDINARILY, THE WHEEL MADE TWO REVOLUTIONS PER MINUTE, AND POWER WAS TRANSMITTED THROUGH 12-INCH SOLID IRON SHAFTING AND PINIONS AND SPUR WHEELS OF MASSIVE PROPORTIONS.

GOOD PROGRESS IS BEING MADE IN THE SWEET POTATO STORAGE INVESTIGATION AT MELFA, VA., UNDER THE DIRECTION OF M.C. BETTS. THE STORAGE HOUSE IS OF CINDER CONCRETE BLOCK AND IS THREE STORIES HIGH. IT IS STEAM HEATED WHICH PERMITS OF CONSIDERABLE FLEXIBILITY OF CONTROL OF HEAT. THE VENTILATION SYSTEM IS OF AMPLE CAPACITY. THE STOCK DELIVERED FOR STORAGE CONSISTS OF 400 BARRELS OF SWEET POTATOES STORED 100 BARRELS TO EACH ROOM. HEAT WAS TURNED OFF THE LAST ROOM ON NOVEMBER 5, THE TEMPERATURE BEING GRADUALLY LOWERED TO A STORAGE TEMPERATURE OF 52 TO 55 DEGREES. IT WAS FOUND POSSIBLE TO HOLD BOTH CURING AND STORAGE TEMPERATURE FAIRLY UNIFORM IN SPITE OF CONSIDERABLE VARIATION OF OUTSIDE TEMPERATURE. THE INDICATIONS ARE THAT MUCH LESS FUEL WILL BE REQUIRED THIS YEAR THAN LAST SEASON WHEN THE HOUSE WAS OPERATED BY THE OWNERS. THE OPERATION OF THE STORAGE WILL BE CONTINUED WITH A VIEW TO CONTROLLING TEMPERATURES UNTIL THE END OF THE STORAGE PERIOD, ABOUT MARCH 15.

INVESTIGATE DIRECTOR OF
VARIETIES OF CONFINING

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AT TROY, NEW YORK, MR. WARREN EXAMINED
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FOR NEARLY HALF A CENTURY. THE WHOLE
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MR. BETTS ATTENDED THE MEETING OF THE STRUCTURES DIVISION OF THE AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS HELD IN CHICAGO NOVEMBER 29 TO DECEMBER 2 AND PRESENTED THE REPORT OF THE COMMITTEE ON RESEARCH IN STRUCTURES. IN THIS REPORT MR. BETTS EMPHASIZED THE NEED FOR RESEARCH ALONG THIS LINE AND OUTLINED A PROGRAM OF INVESTIGATION WHICH MET THE APPROVAL OF THE SECTION.

DURING NOVEMBER T.A.H. MILLER CONSULTED WITH THE EXTENSION SERVICE OF THE UNIVERSITY OF VERMONT AT BURLINGTON, IN REGARD TO THE RECONSTRUCTION AND REPAIR OF FARM BUILDINGS DAMAGED BY THE RECENT FLOOD. HE FOUND A LARGE AMOUNT OF DAMAGE TO THE BUILDINGS, MANY OF WHICH WERE WASHED AWAY, OR DESTROYED WHILE OTHERS WERE SHIFTED UPON THEIR FOUNDATIONS. THE CONDITION OF THE FARM MACHINERY IS SERIOUS AS MUCH OF IT IS COVERED WITH MUD. IN MOST INSTANCES THE MACHINERY WILL HAVE TO BE TAKEN APART TO BE CLEANED AND REPAIRS MADE. ANOTHER PROBLEM TO BE MET IS THE REFERTILIZATION OF SILT AND SAND COVERED FIELDS AND THE BALANCING OF STOCK TO THE REDUCED ACREAGE. IN THE SPRING THERE IS LIKELY TO BE FURTHER DAMAGE DUE TO EROSION AS THE FLOOD SWEEPED WITH SUCH A FORCE THAT IT STRIPPED THE LOWER VALLEYS OF COVER. LITTLE RECONSTRUCTION CAN BE UNDERTAKEN BEFORE SPRING BECAUSE THE ROADS ARE PRACTICALLY IMPASSABLE AND CAN NOT BE REPAIRED UNTIL AFTER THE GROUND THAWS NEXT SPRING.

COMPLETING HIS FIELD STUDY OF MECHANICAL COTTON PICKING, W.M. HURST RETURNED TO WASHINGTON DECEMBER 15. WITH HIS RETURN AND THAT OF MR. HUMPHRIES THE SEASON'S FIELD WORK IN CONNECTION WITH THE COMBINE HARVESTER AND COTTON PICKING WAS COMPLETED. DURING THE PAST SEASON COOPERATIVE STUDIES IN REGARD TO THE COMBINE HAVE BEEN MADE IN PENNSYLVANIA, VIRGINIA, INDIANA, AND ILLINOIS. PLANS FOR FUTURE WORK IN THIS CONNECTION WILL BE WORKED OUT AT DEPARTMENTAL CONFERENCE IN THE NEAR FUTURE.

MR. STANLEY W. MCBIRNEY OF IDAHO WAS APPOINTED ASSISTANT AGRICULTURAL ENGINEER, EFFECTIVE DECEMBER 1. HE WAS ASSIGNED TO ASSIST MR. GRAY AT TOLEDO, OHIO, IN THE DEVELOPMENT OF MACHINERY FOR FIGHTING THE EUROPEAN CORN BORER.

THE DISTRIBUTION OF WAR SURPLUS EXPLOSIVES IS APPROACHING COMPLETION. RECENTLY THE LAST SMOKELESS POWDER, AN INGREDIENT OF PYROTOL, WAS SHIPPED FROM TULLYTOWN, PENNSYLVANIA. THE DUPONT COMPANY EXPECTS TO COMPLETE THE CARTRIDGING OF PYROTOL AT GIBBSTOWN, NEW JERSEY, BEFORE JANUARY 1. SUFFICIENT ORDERS HAVE BEEN RECEIVED TO EXHAUST THE ENTIRE REMAINING SUPPLY AT THAT POINT. THE BARKSDALE, WISCONSIN AND DUPONT, WASHINGTON PLANTS WILL CONTINUE OPERATION, PERHAPS UNTIL SOME TIME NEXT SPRING. THE FOLLOWING SHIPMENTS WERE MADE FROM THE THREE PLANTS DURING NOVEMBER:

BARKSDALE	560,400 Lbs.
DUPONT	866,150 "
GIBBSTOWN	509,000 "

G.A. CUMINGS IS PREPARING A PROGRESS REPORT COVERING THE EXPERIMENTAL WORK ON FERTILIZER DISTRIBUTORS CARRIED ON FOR THE PAST SEVERAL YEARS AT THE ARLINGTON FARM.

